Exploitable Results by Third Parties
ITEA2 Call 8 – 13016 C³PO: Collaborative City Co-design PlatfOrm

<table>
<thead>
<tr>
<th>Project details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project leader:</td>
</tr>
<tr>
<td>Andy De Mets</td>
</tr>
<tr>
<td>Email:</td>
</tr>
<tr>
<td><a href="mailto:andy.demets@barco.com">andy.demets@barco.com</a></td>
</tr>
<tr>
<td>Website:</td>
</tr>
<tr>
<td><a href="https://c3poprojectblog.wordpress.com/">https://c3poprojectblog.wordpress.com/</a></td>
</tr>
</tbody>
</table>
Name: Querying on core ontology and domain ontologies of city-co-design

<table>
<thead>
<tr>
<th>Input(s):</th>
<th>Main feature(s)</th>
<th>Output(s):</th>
</tr>
</thead>
<tbody>
<tr>
<td>RDF query</td>
<td>Semantic modeling of a set of domain ontologies of city co-design (transport,</td>
<td>RDF result</td>
</tr>
<tr>
<td></td>
<td>GIS, traffic, planet) and semantic linkage between them (core ontology)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Semantic data storage using W3C linked open data standard</td>
<td></td>
</tr>
</tbody>
</table>

**Unique Selling Proposition(s):**
- Semantic and standardized representation of core ontologies for city-co-design
- Compliant with the W3C linked data approach (linked open data)
- Easy to integrate with other ontologies (domains)

**Integration constraint(s):**
- W3C Linked (open) data (RDF(S) & OWL standardized)
- RDF-based data storage
- Cloud infrastructure platform

**Intended user(s):**
- Application developers of points solutions in city co-design

**Provider:**
- Open source

**Contact point:**
- Philippe Thiran & Alper Kanak

**Condition(s) for reuse:**
- None (open source)

*Latest update: 9 November 2017*
Exploitable Results by Third Parties

ITEA2 Call 8 – 13016 C³PO: Collaborative City Co-design PlatForm

Name: AROnSite

<table>
<thead>
<tr>
<th>Input(s):</th>
<th>Main feature(s)</th>
<th>Output(s):</th>
</tr>
</thead>
</table>
| ▪ 3D model of planned building, and possible existing buildings  
▪ Map of building site | ▪ The AROnSite application augments the 3D building model in live video image on mobile device’s screen  
▪ Accurate augmentation based on interactive initialization and markerless tracking  
▪ Fully automatic operation, based on previously stored environment features  
▪ Visualization features, including comparing of alternative designs, masking by existing buildings, different lighting models  
▪ Implemented on Android mobile devices  
▪ Content creation using separate MapStudio application on Windows | ▪ Real time AR view of planned building shown on real world site  
▪ Videos and still images of AR view |

Unique Selling Proposition(s): ▪ Most easy-to-use and accurate outdoor augmenting application for architectural AR visualization  
▪ Simply place the 3D building models on map, and step outside to see them augmented in real time view on mobile device

Integration constraint(s): ▪ Supported 3D model formats: Collada, 3DS, OBJ, FBX, IFC  
▪ Supported map formats: Google Maps, GeoTIFF

Intended user(s): ▪ Land use consultants, architects, city officials, other interest groups

Provider: ▪ VTT Technical Research Centre of Finland Ltd.

Contact point: ▪ charles.woodward@vtt.fi

Condition(s) for reuse: ▪ Software licensing per company, per year, or per model  
▪ Also, integration with existing 3D content authoring systems

Latest update: November 8, 2017
Name: VR 4 Urban Transformation

<table>
<thead>
<tr>
<th>Input(s):</th>
<th>Main feature(s)</th>
<th>Output(s):</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ 3D design of new urban area plans</td>
<td>▪ The application enables virtual tours in a 3D urban area</td>
<td>▪ A game-like VR environment</td>
</tr>
<tr>
<td>▪ 3D design of infra- and super-structure</td>
<td>▪ 3D design of infra- and super-structure can be shown as layers of data</td>
<td></td>
</tr>
<tr>
<td>▪ Any city data (static or dynamic)</td>
<td>▪ Static or dynamic city like existing roads and vehicle traffic can be visualized as an additional layer</td>
<td></td>
</tr>
<tr>
<td>▪ Map</td>
<td>▪ Map information can be shown</td>
<td></td>
</tr>
<tr>
<td>▪ Preferences</td>
<td>▪ New urban design choices can be virtually presented and users can vote for the options.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Can be shown by smart VR glasses like Oculus Rift or HTC Vive</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Can be shown by smart VR glasses like Oculus Rift or HTC Vive</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ A game-like VR environment</td>
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Unique Selling Proposition(s):
▪ Suitable for both hand use and interaction booths
▪ Layered information with live sensory data can be shown
▪ Can be integrated with any semantic framework

Integration constraint(s):
▪ Supported 3D model formats: Collada, 3DS, OBJ, FBX
▪ Supported map formats: Google Map
▪ (if requested) integration with a cloud platform

Intended user(s):
▪ Land use consultants, architects, city officials, citizens other interest groups

Provider:
▪ ERARGE

Contact point:
▪ alper.kanak@erarge.com.tr

Condition(s) for reuse:
▪ Software licensing per company, per year, or per model

Latest update: November 9, 2017
## Name: CHAOS™ for city challenges

<table>
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<tr>
<th>Input(s):</th>
<th>Main feature(s)</th>
<th>Output(s):</th>
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</table>
| ▪ Any streaming city data (traffic, processes, movements)  
▪ Maps | ▪ Modelling big data with statistical analytics to identify confidence intervals  
▪ Chaotic predictions | ▪ Inferred analysis results  
▪ Recommendations |

### Unique Selling Proposition(s):
- Statistical analytics generate a confidence interval which can be used for planning urban services (i.e. traffic intensity will realize in an interval of [30% - 70%])
- Chaotic prediction generates recommendations (like traffic signaling duration) for grid-like urban transportation network
- For non-grid networks, the chaotic analysis generates a recommendation for providing predictability (add a detour in a specific location for chaotic predictability)

### Integration constraint(s):
- The tool should be sourced with streaming numerous data
- Operates on homogeneous data (i.e. only for city traffic or only for CO2 measurements)

### Intended user(s):
- Land use consultants, municipalities, city officials

### Provider:
- ERARGE

### Contact point:
- alper.kanak@erarge.com.tr

### Condition(s) for reuse:
- Software licensing per company, per year, or per model
- selling recommendations or inference knowledge for each case study

**Latest update: November 9, 2017**
## Name: AR 4 Urban Transformation

<table>
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<td>▪ 3D design of infra- and super-structure</td>
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<tr>
<td>▪ Map</td>
<td>▪ Map information can be shown</td>
<td></td>
</tr>
<tr>
<td>▪ 3D design of infra- and super-structure</td>
<td>▪ Can be shown by smart AR glasses like Hololens</td>
<td></td>
</tr>
<tr>
<td>▪ Any city data (static or dynamic)</td>
<td>▪ Operates on mobile devices as well</td>
<td></td>
</tr>
</tbody>
</table>

### Unique Selling Proposition(s):

- Markerless AR can be generically adjusted to any environment
- Marker-based AR can be used for table-top planning
- Layered information with live video data can be shown
- Can be integrated with any semantic framework

### Integration constraint(s):

- Supported 3D model formats: Collada, 3DS, OBJ, FBX
- Supported map formats: Google Map
- (if requested) integration with a cloud platform

### Intended user(s):

- Land use consultants, architects, city officials, citizens other interest groups

### Provider:

- ERARGE

### Contact point:

- alper.kanak@erarge.com.tr

### Condition(s) for reuse:

- Software licensing per company, per year, or per model

*Latest update: November 9, 2017*
Name: Urban Traffic Semantic and Computer Vision Framework and ERARGE Traffic Ontology

<table>
<thead>
<tr>
<th>Input(s):</th>
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<th>Output(s):</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Traffic data (open data like YANDEX traffic intensity or instant traffic intensity values extracted by the online visual urban surveillance system)</td>
<td>▪ Standardized access to linked (semantic) data</td>
<td>▪ RDF results</td>
</tr>
<tr>
<td>▪ API calls and RDF queries</td>
<td>▪ Service that can be integrated with any web utility</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Computer vision techniques to extract vehicle and pedestrian intensity from surveillance camera recordings</td>
<td></td>
</tr>
</tbody>
</table>

Unique Selling Proposition(s):

- ETO is specially designed for traffic challenges covering the pre-, post-, and current status urban transformation
- It provides a good taxonomy of city roads
- Urban and traffic events are well-categorized
- Cost of any urban service or any related recommendation for urban or traffic events can be modeled
- Capable of extracting vehicle and pedestrian intensity from surveillance camera recordings and feed the system by the extracted data
- Semantic and standardized access to linked data
- Compliant with the W3C linked data approach (linked open data)
- Easy to upload/download (new) ontologies

Integration constraint(s):

- OWL standardized
- Any cloud platform that enables the streaming of traffic data

Intended user(s): Land use consultants, municipalities, city officials

Provider: ERARGE

Contact point: alper.kanak@erarge.com.tr

Condition(s) for reuse:

- Software licensing per company, per year, or specified urban area
- Opening ontology for research purposes

Latest update: 9 November 2017
### Name: iSocialWall

<table>
<thead>
<tr>
<th>Input(s):</th>
<th>Main feature(s)</th>
<th>Output(s):</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ All posts from Twitter based on keywords, hashtags and @mentions ▪ All Municipality Facebook, Instagram, Youtube, Flickr account’s ▪ Maps</td>
<td>▪ Social Wall for Outdoor Screens at Municipality Area ▪ Social interaction tools ▪ Social city platforms ▪ ▪</td>
<td>▪ A social media platform over WEB ▪</td>
</tr>
</tbody>
</table>

**Unique Selling Proposition(s):**
- showcasing what people are saying by utilizing the power of social media platforms
- adding social news and information, administration, etc at public places
- live stream puts the on-line conversations in front of more people and encourages others to join in and have their say too
- opinion mining in social city platforms, which will integrate widely used social networking services and the data gathered from different sources of the C3PO platform
- social media-based co-design tools that support both asynchronous and synchronous collaboration

**Integration constraint(s):**
- iSocialWall needs an Internet connection (wired or wi-fi) to function. However if the connection fails, it will still cycle based on the content already received and cached via the browser.
- A virtual server that hosts iSocialWall

**Intended user(s):**
- city officials, citizens other interest groups

**Provider:**
- MANTIS

**Contact point:**
- guven.kose@mantis.com.tr

**Condition(s) for reuse:**
- Software licensing per company, per year,

*Latest update: 9 November 2017*
Name: Participation Pavilion

<table>
<thead>
<tr>
<th>Input(s):</th>
<th>Main feature(s)</th>
<th>Output(s):</th>
</tr>
</thead>
<tbody>
<tr>
<td>- City/municipality policy topics</td>
<td>- Physical booth (hardware) to be placed temporarily in the urban environment</td>
<td>- Transcribed opinions</td>
</tr>
<tr>
<td>- Visualisations of future urban</td>
<td>- Open questions can be answered using voice</td>
<td>- Generalized insights</td>
</tr>
<tr>
<td>developments</td>
<td>- Voice responses are recorded</td>
<td></td>
</tr>
<tr>
<td>- Citizen opinions</td>
<td>- Recordings are analyzed using language analysis</td>
<td></td>
</tr>
</tbody>
</table>

Unique Selling Proposition(s): A digital urban participation method using non-digital elements as dominant interactions
- Reaching out to a broad, age or background independent, slice of citizens

Integration constraint(s): Close interaction between the provider and the user is required

Intended user(s):
- City council
- Municipalities
- Policy makers
- Citizens & citizen representatives

Provider: Studio Dott.

Contact point: Dries De Roeck (dries@studiodott.be)

Condition(s) for reuse:
- Software: single cost licensing (per project)
- Hardware: renting or service licensing

Latest update: 9/11/2017
## Name: Netigma

<table>
<thead>
<tr>
<th>Input(s):</th>
<th>Main feature(s)</th>
<th>Output(s):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any data based on location</td>
<td>Rule engine and action capability</td>
<td>Map based platform over WEB</td>
</tr>
<tr>
<td>(tweet, traffic, etc.)</td>
<td>Dynamically created reports and queries</td>
<td>Spatial and statistical analysis</td>
</tr>
<tr>
<td>Digitized city plan drawings</td>
<td>Document archive capability</td>
<td></td>
</tr>
<tr>
<td>Maps</td>
<td>User and authentication management</td>
<td></td>
</tr>
</tbody>
</table>

### Unique Selling Proposition(s):
- Location based social media analysis
- Location based public opinion vote analysis
- Visualization of urban transformation plans
- Reports on location based datas (hourly traffic intensity)
- Queries over map
- Big data analysis

### Integration constraint(s):
- Netigma needs an Internet connection (wired or wi-fi) to function.
- A server that hosts Netigma
- Connection with a specified database for base tables
- Spatial tables for mapping functions

### Intended user(s):
- Citizens
- Stakeholders of city co-design
- Municipalities

### Provider:
- NETCAD

### Contact point:
- hakan.yildirir@netcad.com.tr

### Condition(s) for reuse:
- Software licensing per company, per year,

*Latest update: 9 November 2017*